

Figure 1(a)-(d). Novel nucleotide sequences 3'prime of the cow Cgamma gene (Cow Cy 3' flanking sequences). Primers are shown in shaded boxes. The 5' primer is in CH3, and the 3' primer is in M1. The sequences of clone 11, clone 3, and clone 5 are set forth in SEQ ID NO: 3, SEQ ID NO: 4 and SEQ ID NO: 5, respectively.

	1		50
clone11	CCTAC ACGTGTGTGG TGATG	CACGA AACTTTACGG	
clone3	CCTAC ACGTGTGTGG TGATG	CACGA GGCCCTGCAC	
clone5	CCTAC ACGTGTGTGG TGATG	CACGA GGCCCTGCAC	
	151		200
clone11	AATCACTACA AAGAGAAGTC CACCTCGAGG	TCTCCGGGTA AATGAGCCTC	
clone3	AATCACTACA CGCAGAAGTC CACCTCTAAG	TCTGCGGGTA AATGAGCCTC	
clone5	AATCACTACA CGCAGAAGTC CACCTCTAAG	TCTGCGGGTA AATGAGCCTC	
	201		250
clone11	GCGCCGCTGA TCTAGTGGAC GTTCCCTCAT	CCACCCACCC CTCCCCCAC	
clone3	ACGTCCCTGC ACCAGCAAGC CCTCACCCAG	C..... ..CCACCCTC	
clone5	ACGTCCCTGC ACCAGCAAGC CCTCACCCAG	C..... ..CCACCCTC	
	251		300
clone11	CCCGGGCTCC AGGTCCAGCC AGGGCGCCCT	AGCCCCTCCC TGTGTGCATT	
clone3	CCCGGGCTCC AAGTCCAGCC AGGACGCCCT	AGCCCCTCCC TGTGTGCATT	
clone5	CCCGGGCTCC AGGTCCAGCC AGGACGCCCT	AGCCCCTCCC TGTGTGCATT	
	301		350
clone11	CCTCCTGGGC CGCCGTGAAT AAAGCACCCA	GGCCGCCCTG GGACCCTGCA	
clone3	CCTCCTGGGC CGCCGTGAAT AAAGCACCCA	GGCCACCCTG GGACCCTGCA	
clone5	CCTCCTGGGC CGCCGTGAAT AAAGCACCCA	GGCCGCCCTG GGACCCTGCA	
	351		400
clone11	ACGCTGTGCT GGTTCCTTCC GAGGCAGAGC	CCTGGTGGCC GCCAGGCCTG	
clone3	ACGCTGTGCT GGTTCCTTCC GAGGCAGAGC	CCTGGTGGCC GCCAGGCCTG	
clone5	ACGCTGTGCT GGTTCCTTCC GAGGCAGAGC	CCTGGTGGCC GCCAGGCCTG	
	401		450
clone11	CGGGGGTGGG CTGAGCCGAC TCTGGGCCAC	TTTGTTCAGC ATCTGTGGGG	
clone3	CAGGGGTGGG CTGAGCCGAC TCTGGGCCAC	TTTGTTCAGC ATCTGTGGGG	
clone5	CGGGGGTGGG CTGAGCCGAC TCTGGGCCAC	TTTGTTCAGC ATCTGTGGGG	
	451		500
clone11	GAGCTGACCC CACTCCGGGC CAGACACACA	GTGAGTGGGT CCAGCAGGCC	
clone3	GAGCTGACCC CGTCCGGGC CAGACACACA	GTGAGTGGGT CCAGCAGGCC	
clone5	GAGCTGACCC CACTCCGGGC CAGACACACA	GTGAGTGGGT CCAGCAGGCC	
	501		550
clone11	ACCTGGGGGC TGCCCAAGGC CACAGAGGGG	CTTGCCAGA GGCACAGCTC	
clone3	ACCTGGGGGC TGCCCGAGGC CACGGAGGGG	CTTGCCAGA GGCGTACCTC	
clone5	ACCTGGGGGC TGCCCAAGGC CACAGAGGGG	CTTGCCAGA GGCACAGCTC	

Figure 1(a)

	551		600
clone11	CACGGTCCCC TCCAGCCACC ACCTGCTGGG CCGGCCTCTG GACAGGAACC		
clone3	CACGGCCCCC TCCAGCCACC ACCTGCTGGG CCGGCCTCTG GACAGGAACC		
clone5	CACGGTCCCC TCCAGCCACC ACCTGCTGGG CCGGCCTCTG GACAGGAACC		
	601		650
clone11	GGGGAAGCCC CCGAGACCCT CAGGGATTGA GGCCCAATGC TTCCCGCCTC		
clone3	GGGGAAGCCC CCGAGACCCT CAGGGATTGA GGCCCAATGC TTCCCGCCTC		
clone5	GGGGAAGCCC CCGAGACCCT CAGGGATTGA GGCCCAATGC TTCCCGCCTC		
	651		700
clone11	TGCTCCAGCC CACGCTGTGG GGCAGGGCCA CATCCTTGTC CCCAGGCCCC		
clone3	TGCTCCAGCC CACGCTGTGG GGCAGGGCCA CATCCTTGTC CCCAGGCCCC		
clone5	TGCTCCAGCC CACGCTGTGG GGCAGGGCCA CATCCTTGTC CCCAGGCCCC		
	701		750
clone11	TGTCCCTGGG TGTCCAGAGT CCTTGTGTCC ACTCTGGGCC TGCCTGGAGC		
clone3	TGTCCCTGGG TGTCCAGAGT CCTTGTGTCC ACTCTGGGCC TGCCTGGAGC		
clone5	TGTCCCTGGG TGTCCAGAGT CCTTGTGTCC ACTCTGGGCC TGCCTGGAGC		
	751		800
clone11	CACGCATGGC CAGGGGGTGG CCCTGCTTCA CCCTCAGGCT CCCAAGGTCA		
clone3	CACGCATGGC CAGGGGGTGG CCCTGCTTCA CCCTCAGGCT CCCAAGGTCA		
clone5	CACGCATGGC CAGGGGGTGG CCCTGCTTCA CCCTCAGGCT CCCAAGGTCA		
	801		850
clone11	GGCCTCGCCC TCCCTCGGCC AGGAGGCTCT GCCCGGCTCT CCCTGCCCAG		
clone3	GGCCTCGCCC TCCCTCAGCC AGGAGGCTCT GCCCGGCTCT CCCTGCCCAG		
clone5	GGCCTCGCCC TCCCTCGGCC AGGAGGCTCT GCCCGGCTCT CCCTGCCCAG		
	851		900
clone11	GGCCAGGCCT GTGCGCCCAT GGGGAGGTCA TCCCTGTGCC TGAAAGGGGT		
clone3	GGCCAGGCCT GTGCGCCCAT GGGGAGGTCA TCCCTGTGCC TGAAAGGGGT		
clone5	GGCCAGGCCT GTGCGCCCAT GGGGAGGTCA TCCCTGTGCC TGAAAGGGGT		
	901		950
clone11	CCAGGCCGAG AGCCCTGAAT GTCCAGGGCA GGGACCTAGC TGCTCCCTGT		
clone3	CCAGGCCGGG AGCCCTGAAT GTCCAGGGCA GGGACCTAGC TGCTCCCTGC		
clone5	CCAGGCCGAG AGCCCTGAAT GTCCAGGGCA GGGACCTAGC TGCTCCCTGT		
	951		1000
clone11	GGACACGGAG CCCAGAGCCA CAGACAACAA GCCCCAGCCC CGCACGCACA		
clone3	AGACACGGAG CCCAGAGCCA CAGACAACAA GCCCCAGCCC CGCACGCACA		
clone5	GGACACGGAG CCCAGAGCCA CAGACAACAA GCCCCAGCCC CGCACGCACA		
	1001		1050
clone11	CGAGACAGCC CGCACCCAGC CTCCTCCACA CGCACTCAGG TGTACATGCG		
clone3	CAAGACAGCC CGCACCCAGC CTCCTCCACA CGCACTCAGG TGTGCATCCG		
clone5	CGAGACAGCC CACACCCCGC CTCCTCCACA CGCACTCAGG TGTGCATCCG		

Figure 1(b)

	1051				1100
clone11	CACATGAGCA	CACTTCACCC	CGTCACACCC	ACACACCTAC	ACACACTCAG
clone3	CACATGAGCA	CACTTCACCC	CGTCACACCC	ACACGCCTAC	ACACACTCAG
clone5	CACATGAGCA	CACTTCACCC	CATCACACCC	ACACGCCTAC	ACACACTCAG
	1101				1150
clone11	GTCTCGCACT	CGGGGACCCA	TGGGGTGACC	CCACGGGCCC	AGA.CCAGAG
clone3	GTCTCGCACT	CGGGGACCCA	TGGGGTGACC	CCACAGGCCC	AGACCCAGAG
clone5	GTCTCGCACT	CGGGGACCCA	TGGGGTGACC	CCACAGGCCC	AGACCCAGAG
	1151				1200
clone11	CTGGGTCTTG	TGAGCCCTCC	CTGTGGACAC	CAGCTGGGCC	CCACCCCTCA
clone3	CTGGGTCTTG	TGAGCCCTCC	CTGTGGACAC	CAGCTGGTCC	CCACCCCTCA
clone5	CTGGGTCTTG	TGAGCCCTCC	CTGTGGACAC	CAGCTGGTCC	CCACCCCTCA
	1201				1250
clone11	GCGCCCATGG	GCTGCTCAGC	GGCCCTTTCC	CACACTGACC	ACACTGACCA
clone3	GCGCCCATGG	GCTGCTCAGT	GGCCCTTTCC	CACACTGACC	ACACTGACCA
clone5	GCGCCCGTGG	GCTGCTCAGC	GGTCTTTTCC	CACACTGACC	ACACTGACCA
	1251				1300
clone11	GGTCAGACAT	CCGTTCCCTG	CCTCCCCTGG	GACACCCACG	CCCCTCCCTA
clone3	GGTCAGACAT	CCGTTCCCTG	CCTCCCCTGG	GGCACCCACG	CCCCTCCCTA
clone5	GGTCAGACAT	CCGTTCCCTG	CCTCCCCTGG	GGCACCCATG	CCCCTCCCTA
	1301				1350
clone11	GCAGGCTGAG	ATCCCCCCTC	AGCCCCTCGT	CCTGGCAGCC	TCACCCCTCG
clone3	GCAGGCTGAG	ATCCCCCCTC	AGCCCCTCGT	CCTGGCACCC	TCACCCCTCA
clone5	GCAGGCTGAG	ATCCCCCCTC	AGCCCCTCGT	CCTGGCACCC	TCACCCCTCA
	1351				1400
clone11	GGCACAGCAC	CCCTCAGGCC	CGGTGCTGTC	AGCCCTCCCT	CCCCGGGGGC
clone3	GGCACAGGGA	CAC...AGCC	CGGCGCTGTC	TGCCCTCCCT	CCCTGGGGGC
clone5	GGCACAGGGA	CAC...AGCC	CGGTGCTGTC	TGCCCTCCCT	CCCTGGGGGC
	1401				1450
clone11	AGGGCCCAGG	AACGTGCGCT	CTGCTGACCC	TCCCAGCTCC	AGGCCTGGCC
clone3	AGGGCCCAGG	CTCACATGCT	CTGCTGACCC	TCCCGGCTCC	AGGCCTGGCC
clone5	AGGGCCCAGG	CTCACATGCT	CTGCTGACCC	TCCCAGCTCC	AGGCCTGGCC
	1451				1500
clone11	CCCAGGGCAG	AGGAGGCCAG	GAAGTGAAGC	TCTGTCCTGT	GGGGAGGTAG
clone3	CCCAGGGCAG	AGGAGGCCAG	GAAGTGAAGC	TCTGTCCTGG	GGGGAGGTGG
clone5	CCCAGGGCAG	AGGAGGCCAG	GAAGTGAAGC	TCTGTCCTGG	GGGGAGGTGG
	1501				1550
clone11	GGTCAGGGTC	CCAGCTCAGG	GCACAGCTCA	GGATGGGAGC	AGGACCCAC
clone3	GGTCAGGGCC	CCAGCTCAGG	GCACAGCTCA	GGATGGGAAC	AGGACACCAC
clone5	GGTCAGGGCC	CCAGCTCAGG	GCACAGCTCA	GGATGGGAGC	AGGACACCAC

Figure 1 (c)

	1551		1600
clone11	AGGCCAGGCC CAGATAGCAG CCAGGGCTGG AGGGGTGGG GCTGGGGCTG		
clone3	AGGCCAGGCC CAGACAGTGG CCAGGGCTGG AGGGGTGGG TCTGGGGCTG		
clone5	AGGCCAGGCC CAGACAGTGG CCAGGGCTGG AGGGGTGGG TCTGGGGCTG		
	1601		1650
clone11	GGCCCCAGAG ACTGACCTCA GGTGACCCCT GCCTGGCCCA TGGGGAGATC		
clone3	GGCCCCAGAG ACTGACCTCA GGTGATCCCT GCCCAGCCCA TGGGGGGATC		
clone5	GGCCCCAGAG AATGACCTCA GGTGATCCCT GCCCAGCCCA TGGGGGGATC		
	1651		1700
clone11	ACGCCACCTT CCCCCACCC AGAGGGAGCC CTGCCC...T ACCCCAGTGA		
clone3	CTGCCACCTT CCCCCACCC AGAGGGAGCC CTGCCCCGAG GCCCTGATGA		
clone5	CTGCCACCTT CCCCCACCC AGAGGGAGCC CTGCCCCGAG GCCCTGATGA		
	1701		1750
clone11	CCCTGCCCCAG CCCTCCGTGG GCAGACACAG CACTGACCAC CCCTCCCTGT		
clone3	TGCCACCCAG CCCCCCGTGG GCAGACACAG CACTGACCAC CCCTCCCTGT		
clone5	TGCCACCCAG CCCCCCGTGG GCAGACACAG CACTGACCAC CCCTCCCTGT		
	1751		1800
clone11	GCAGACTTGC TGCTGGAGGA GGAGATCTGT GCGGACGACC TGGATGGGGA		
clone3	GCAGACCTGC TGCTGGAGGA GGAGATCTGT GCGGACGCC AGGACGGGGA		
clone5	GCAGACCTGC TGCTGGAGGA GGAGATCTGT GCGGACGCC AGGACGGGGA		
	1801		1850
clone11	GCTGGACGGG CTC	TTGGACCA CCATCTCCAT CTT	
clone3	GCTGGACGGG CTC	TTGGACGA CCATCACCAT CTT	
clone5	GCTGGACGGG CTC	TTGGACCA CCATCACCAT CTT	

Figure 1(d)

Figure 2(a)-(e). Novel nucleotide sequences 3'prime of the sheep Cgamma genes. Primers are shown in shaded boxes. The 5' primer is in CH3, and the 3' primer is in M2. The sequences of clone 11 and clone 1 are set forth in SEQ ID NO: 8 and SEQ ID NO: 9, respectively.

	101		150
clone11	CCTACGCGTG TGCGGTGATG	CACGAGGCTC TACACAACCA CTACACACAG	
clone1	CCTACGCGTG TGCGGTGATG	CACGAGGCTC TGCACAACCA CTACACACAG	
	151		200
clone11	AAGTCGATCT CTAAGCCTCC GGGTAAATGA GCCACATGCC CCCGCACCAG		
clone1	AAGTCGATCT CTAAGCCTCC GGGTAAATGA GCCACATGCC CCCGCACCAG		
	201		250
clone11	CAAGCCCTCA CCCAGCCCGC CCTCCCCGGG CTCCAGGTCC AGCCAGGACG		
clone1	CAAGCCCTCA CCCAGCCCGC CCTCCCCGGG CTCCAGGTCC AGCCAGGACG		
	251		300
clone11	CCCTAGCCCC TCCCTGTGTG CATGCCTCCT GGGCCGCCAT GAATAAAGCA		
clone1	CCCTAGCCCC TCCCTGTGTG CATGCCTCCT GGGCCGCCAT GAATAAAGCA		
	301		350
clone11	CCCAGGCCGC CCTGGGACCC TGCAACGCTG TGCTTGTTCT TTCCGAGGCA		
clone1	CCCAGGCCGC CCTGGGACCC TGCAACGCTG TGCTTGTTCT TTCCGAGGCA		
	351		400
clone11	GAGCCCTGGT GACCGCCAGG CCTGCGGGGG GTGGGCTGAG CCCACTCTGG		
clone1	GAGCCCTGGT GATCGCCAGG CCTGCGGGGG GCGGGCTGAG CCCACTCTGG		
	401		450
clone11	GCCGCTTGGT TCAGCATCTG TGGGGGCGCT GACCCCTCTC CGGGCCAGAC		
clone1	GCCGCTTGGT TCAGCATCTG TGGGGGCGCT GACCCCTCTC CGGGCCAGAC		
	451		500
clone11	ACACAGTGAG TGGGTCCGGC AGGGCACCTG GGGGCTGCCC GAGGCCTCGG		
clone1	ACACAGTGAG TGGGTCCGGC AGGGCACCTG GGGGCTGCCC GAGGCCTCGG		
	501		550
clone11	AGGGGCTTGG CCAGAGGCGC AGCTTCACGG CCCCCTCCAG CCACCACATT		
clone1	AGGGGCTTGG CCAGAGGCGC AGCTTCACGG CCCCCTCCAG CCACCACATT		
	551		600
clone11	CTGGGCCAGA CTCTGGGCAG GAACGGGGGA AGCCCCGAC ACCTCAGGGA		
clone1	CTGGGCCAGA CTCTGGGCAG GAACGGGGGA AGCCCCGAC ACCTCAGGGA		
	601		650
clone11	TTGAGGCCCA ACGCTTCCCG CCTCTGCTCC AGCCCACGCT GAGGGGCAGG		
clone1	TTGAGGCCCA ACGCTTCCCG CCTCTGCTCC AGCCCACGCT GAGGGGCAGG		

Figure 2(a)

	651				700
clone11	GCCGCGGCCT	TGTCCCCAGG	CCCCTGTTCC	TGGGTGCCCCA	GAGTCCGTGT
clone1	GCCGCGGCCT	TGTCCCCAGG	CCCCTGTTCC	TGGGTGCCCCA	GAGTCCGTGT
	701				750
clone11	GTCCACTCTG	GGCCTGCCTG	GAGCCAGACT	GGCCCAGGGG	GAGGCCCTGC
clone1	GTCCACTCTG	GGCCTGCCTG	GAGCCAGACT	GGCCCAGGGG	GAGGCCCTGC
	751				800
clone11	TTCACCTCA	GGCTCCCGAG	GTCAGGCATC	ATCCTCGTCG	GCCAGTAGCT
clone1	TTCACCTCA	GGCTCCCGAG	GTCAGGCATC	ATCCTCGTCG	GCCAGTAGCT
	801				850
clone11	CTGCCTGGCT	CTCTCTGCCC	GGGGCCAAGC	CTGTGTGCCC	ATGGGGAGGT
clone1	CTGCCTGGCT	CTCTCTGCCC	GGGGCCAAGC	CTGTGTGCCC	ATGGGGAGGT
	851				900
clone11	CGTCCCTGTG	CCTGAAAAGG	GCCCAGGCTG	GGAGCCCTGA	ACGTCCAGGG
clone1	CGTCCCTGTG	CCTGAAAAGG	GCCCAGGCTG	GGAGCCCTGA	ACGTCCAGGG
	901				950
clone11	CAGGGACCTA	GCTGCTCCCT	GGGGACACTG	AGCCCAGAGC	CCCAGACACC
clone1	CAGGGACCTA	GCTGCTCCCT	GGGGACACTG	AGCCCAGAGC	CCCAGACACC
	951				1000
clone11	AAGCCCCAGC	CCCGCACGCA	CACGAGACAG	CCCACACCCA	GCGTCCTCCA
clone1	AAGCCCCAGC	CCCGCACGCA	CACGAGACAG	CCCACACCCA	GCGTCCTCCA
	1001				1050
clone11	CACGCACTCA	GGCGTCCACC	CGCACACAAG	CATGCTTCAC	CCCCGTCACA
clone1	CACCACTCA	GGCGTCCACC	CGCACACAAG	CATGCTTCAC	CCCCGTCACA
	1051				1100
clone11	CACCCACATG	CCTGCACACA	CTCAGGTCTC	ACGCTCCGGG	ACCCATGGAG
clone1	CACCCACATG	CCTGCACACA	CTCAGGTCTC	ACGCTCCGGG	ACCCATGGAG
	1101				1150
clone11	TGATCCCACG	GGCCCAGACC	CAGAGCTGGG	TCTCATGAGC	CCTCCCTGTG
clone1	TGATCCCACG	GGCCCAGACC	CAGAGCTGGG	TCTCATGAGC	CCTCCCTGTG
	1151				1200
clone11	GACACCAGCT	GGTCCCCATT	CTCCAGCGCC	CTTGGGCTGC	TCAGTGGCCC
clone1	GACACCAGCT	GGTCCCCATC	CTCCAGCGCC	CTTGGGCTGC	TCAGTGGCCC
	1201				1250
clone11	TTTCCCACAC	TGACCACACT	GACCAGGTCA	GACATCCTTC	CTCGCCTCCC
clone1	TTTCCCACAC	TGACCACACT	GACCAGGTCA	GACATCCTTC	CTCGCCTCCC

Figure 2(b)

	2451		2500
clone11	GGGAGCGCAT CTCCAGCATG CTGTCGCACA GCTTCGTTGC TAACAAGACC		
clone1	GGGAGCGGCA TCTCCAGCTG CTGTCGCACA GCTTCGTTGC TAACAAGACC		
	2501		2550
clone11	GCTTAGTCTC GTGGTTAGAC CAACCTGCTT TCTCGAGTAA TTGTTAATTT		
clone1	GCTTAGTCTC GTGGTTAGAC CAACCTGCTT TCTCGAGTAA TTGTTAATTT		
	2551		2600
clone11	ACAGGAGTTT CCTGTATTTT TCAACTTATA ATCCCCTAGT CAGATAACTC		
clone1	ACAGGAGTTT CCTGTATTTT TCAACTTATA ATCCCCTAGT CAGATAACTC		
	2601		2650
clone11	TTTAATCACC TATTCTGCCC CTTCAATTTT TCCCTATCGA TCTCAGCAAC		
clone1	TTTAATCACC TATTCTGCCC CTTCAATTTT TCCCTATCGA TCTCAGCAAC		
	2651		2700
clone11	CCATCACTGC CCTCACTGTC CTTAAACTGT CCCTTAACTG ACCAGACTGT		
clone1	CCATCACTGC CCTCACTGTC CTTAAACTGT CCCTTAACTG ACCAGACTGT		
	2701		2750
clone11	CCCTCAGTGT CCCCTCAGAG TCACCTCCCT ATCACCTCAC TGTCCCTCTC		
clone1	CCCTCAGTGT CCCCTCAGAG TCACCTCCCT ATCACCTCAC TGTCCCTCTC		
	2751		2800
clone11	TGCCCCCTCTC TGCCCCCTCTC TGTCCCTCCC TGCCCCCTCCC CGTCCCCCTCT		
clone1	TGCCCCCTCTC TGCCCCCTCTC TGTCCCTCTC TGTCCCTCCC CGTCCCCCTCT		
	2801		2850
clone11	CTGTCCCTCT CTGCCCCCTCA CTGCTCCTCT CTGCACCTCA CTGCTCCTCA		
clone1	CTGTCCCTCT CTGCCCCCTCA CTGCTCCTCT CTGCACCTCA CTGCTCCTCA		
	2851		2900
clone11	CTGCCCTGGG GGAGGCCCGC ATCGAGGTGT CTCTGCTCAC CCCGTCCCCC		
clone1	CTGCCCTGGG GGAGGCCCGC ATCGAGGTGT CTCTGCTCAC CCCGTCCCCC		
	2901		2950
clone11	ACCCCGTACC CCCCGCCAGG TGAAGTGGAT CTTCTCCTCG GT		
clone1	ACCCCGTACC CCCCGCCAGG TGAAGTGGAT CTTCTCCTCG GT		

Figure 2(e)

Figure 3(a)-(b). Novel 3'prime flanking sequence (SEQ ID NO: 10) of rabbit Cgamma gene.

CTCCCCCGCAGCGCGCAGG

TGTGCACCCCGCACACAAATAAAGCACCCAGCTCTGCCCTGAGAGGCTGTCCTGATTTCCT
TCCAAGGCAGAGGCTTCCACTCGGGCCGGACAGGGTTGGGCGGGCGCCGTGGGCTCTGCT
GTGGCCAGCAGCCAGAACGGTCAACAGTGGGACAGGGGCAGACCCACAGCACAGGGGCCT
GCCAAGAACTGGGCTCAGCCGGAGTGCTGTGGCAGGTCCCCCTTGACGCTAGCACGTGT
GTGCTGGGCAGGCAGAGGCCCCCAGGGGAGGAGCACACAGCTACCACCTCTGCAAGAGCC
TGGCCTGGCGCCAGGTCCAGTCCACAGGGTGTGTAGTACACAGAGCCTCATCTTACCA
CAGATGTAGGGACAGACCCACCACGCCCCCTGCACCCACCCAGCCTCGCCCCCTGTGGGA
CCAGGGCTACCACTCCACTCCCCCGCCAGAGCAGCAGAAGCAGGTGGCATCCTCAGCAG
AGGGACAGTCTCACCCCTCCACGGCACTGAGCCCTGACCCATCAAACAAGCCCCCTCCTGC
TGCACAGCACCTGTGTGCACATCACACACACACACACACACACTGAGGCCTGACCCCA
TCAAACAAGCCCCCTCCTGCTGCACAGCACCTGTGTGCACATCACACACACACACACAC
ACACTGAGGCTGACCCCATCCTGCCCTCCTGCTGCATGGCACCTGTGTGCACATCACAC
ACACATGCACACACACACTCACACACACTGAGCCCTGACCCCATCCTGCCCTCCTGCTGC
ATGGCACCTGTGTGCACATCACACACACACACACACACACACACACTGAGCCCTGACC
CCATCCTGCCCTCCTGCTGCATGGCACCTGTGCACACATCACAAACACGCCTGCCTCATA
CACTGGCACTCAGAAGGGGGCCCTGTACACGCATACACATGCACACACCTTGACACATGG
GCCCCCTACACACGCATCACACACACTCATGCACACTCCTCACACATGGCCCTCCTGCAC
ATACATTGCACACACATGTGCACAGACCTCACAATGGGCCCCCTGCACACACATTGTACAC
ACGCATGTGCACACACTTCACACATGGGCCCCCTGCACATGCATTGCACACACAGACACA
CACATGTGCATTCTTCACACATTGGGGCCCTTGCAAGGGATGCCCTGCACACACATTGCAC
ATGCTCACATGTGCACACACCCCACTGGAGCCTTGATAGGGCCCCCTGTACACACAC
CATGCTACACACACACCTCACACAAGGGGGCCCCCTACATACGAAAACACACACACACA
CATGCACACACCTCATACACGGGGCCCCCTACACACATCACACACACACACACACACGT
ATGCATGCCTCACACACAGACCTTGCAAGGGGGCCCCCTGCACATGCATCAAACACATATG
CACATGTTTCACACACACGGTCCCCCTACACACACTGCACACGCACACATGTGTACATGCT
TCACACACTGGGGCCTTGATGGGGTCCCCTGCATAGCATAGCACCCAGAGCCACGCCAG
GTGCCTGGGCACATGGACACTGGTGCACACACAGCACCCCAAGCCCAGCTCTCCCATCCAA
GGGGCACCAGCACCCCCCACTCACGAGCACCTGAATTCTGCTCCCCACAAGCGAACGT
GCACCTTACCTTCCAGACGTCCCTTTCTGTGGCCACTCCCATAGGTATTGGCGAGACC
CTCCCTTGACCTTGGGCTGGTCAACCCAGGGGACAGGAGAGGGCCAAGTTGGGGCCACAG
TACCACTGCCCAGCAGGGGTGAGGCAAGCAGAGGGTGGGTCTGTGAGGCGTCTGGCCAGC
CGTGCTGGGGCCCAGGTGGGGAGCAGCTGGGTGGCTGAGGTGGCTTCTTGCAGGTGGTT
GGGGGGAGCTGGCCCCACAAGTGCCACTGCCCAGCACTGTCCAGTGCTTCCCCCTGAACC
TCCCGGCCACCCATCCCCAGCTGCAGCCGAGAGGGAGTGCCCCCTCGGCCTCCTCGGCAA
GACGCACGCTGACTGCCCTCCCCATCCAGAGCTGCAGCTGGACGAGAGCTGTGCCGAGG
CCCAGGACGGGGAGCTGGACGGGCTGTGGACCACCATCACCATCTTCATCTCCCTCTTCC
TGCTCAGCGTGTGCTACAGCGCCACAGTCACCTCTTCAAGGTGGGTGCTGCACCCGGCA
CGGGTGGGCTGGGGGCCAGGGGCGGGGGCCAGGCCCTCCTCACCCCGCGCCGC
CGCTGCTGCAGGTGAAGTGGATCTTCTCGTCCGTGGTGGAGCTGAAACACACCATCGCTC
CCGACTACAGGAACATGATCGGGCAGGGGGCCTAGGCCCTTCGTTCTCACAGCCTGCCTC
CCTGGCCAGCAGGAGCCCCCGCTCCGCTCGGACCCCATGGCTCTCTGCTCTGGCCGCT
CCGGACCCCTCCGCCTCGGGAGAAGCGCGCAGCTGATGCCTGCCGGCCCCCTCCACGCAGC
AGTGCGGACAGCACGCATCTGTCTCCACCCGGCAGGACCCACCCAGGGCCAGCCCTGA
CCGCCAGCCTCCTGGACTCAGGGCTCCTCTGAGAAAAGGCCCACTTGTTGGTCCCCTCAG
CCCACACCCAGGCAGCCTCCGGTGGGTGCTTCCCTGGACCCAGCCTGAGGCCTATGCTT
GTTCTCCTGTGGCTCTTACTCAGAGGCCCGTGTGGAATCCACCCACAGGGACAGTGCC

Figure 3(a)

GAAGCTTTACTTGTGGGGGCGG
GCAGGTCTAAGGGACCTGCCAGGTGTGGGGGCTGGGCTTGA CT CAGCAGGAGCCTTCTAG
AAGGAAAGCTCTGGAGAAGGTGGGGGCAGAGGGCGGGAAAGGCCTGTGAGGAGGCGGGTG
GTGGGCAGGGCCACTGGGAAGGGAGGGCTGGGGGTGACACTCAGGTTGGCACTGGGGAGG
ACCTGAGGAGGCAGGTGCCAGGCACAGAGCTGAACCTGGGCAGGGCAGGGGCAGGTAACA
AGAAGGATTCTCCTTGGAGCCTGGTCCAGGGTGGTCCAGGGCGGTCCAGGGCCTGGGGTT
TGCAAGCTGGGCTGTGACAGGGCCTCTCTCCCCAGGGGCAAGCAGCAAAGCCTGGGCACA
GAGCCCAAAGCCCCCACACAGAGAAGCTCCCCAGGGCAGGGCCTGCAGGGCTTGGGGGAC
CTTCTTGAGCAGGCAGGACAGGACAGAGGCATGAGATCAGCCTCCCAGAGGCTGGAATGATA
GGTCCAGCAGGAGGGGGCCACATGGGCTCTGGTTAGCAGGAGAAAACAGCCCCCAGGTCC
CCATGGCCACACGCACCGACTGCTGGTGAAGCTTTGGGTGGCAGACGAGAGCCACATGG
CAGCTGCTCCTGTCACTCTCTGGGAGTGCATCCAGGGGCTTCGAC

Figure 6. Comparison of human, mouse, rabbit, sheep, cow and camel sequences for the the M1 and M2 regions 3' of the Cgamma gene.

M1

	1	46	SEQ
camel	EPLLEEESCA	EAQSGELDGL	WTTISIFITL FLLSVCYSAT VTLFK. 14
human-Ig3	.ELQLEESCA	EAQDGELDGL	WTTITIFITL FLLSVCYSAT VTFFK. 15
human-Ig3/2	.ELQLEESCA	EAQDGELDGL	WTTITILITL FLLSVCYSAT VTFFK. 16
human-Ig1	.ELQLEESCA	EAQDGELDGL	WTTITIFITL FLLSVCYSAT VTFFK. 17
mouse-Ig1	.GLQLDETC	EAQDGELDGL	WTTITIFISL FLLSVCYSAA VTLFK. 18
mouse-Ig2a	.GLDLDDVCA	EAQDGELDGL	WTTITIFISL FLLSVCYSAS VTLFK. 19
mouse-mRNA	PGLQLDETC	EAQDGELDGL	WTTITIFISL FLLSVCYSAA VTLFK. 20
mouse-Ig3	.ELELNETCA	EAQDGELDGL	WTTITIFISL FLLSVCYSAS VTLFK. 21
mouse-Ig3/2	.ELELNGTCA	EAQDGELDGL	WTTITIFISL FLLSVCYSAS VTLFK. 22
sheep-clone11	.LLLEEESCA	DAQDGELDGL	WTTISIFITP FLLSVCYSAT VTLFK. 23
sheep-clone1	.LLLEEESCA	DAQDGELDGL	WTTISIFITL FLLSVCYSAT VTLFK. 24
cow-clone11	.LLLEEICA	DDLDELDGL 25
cow-clone3/5	.LLLEEICA	DAQDGELDGL 26
rabbit	..LQLDESCA	EAQDGELDGL	WTTITIFISL FLLSVCYSAT VTLFK. 27

M2

	1	27	SEQ
camel	VKWIFSSVVE	LKRTIVPDYR	NMIGQGS 28
human-Ig3	VKWIFSSVVD	LKQTIIPDYR	NMIGQGA 29
human-Ig3/2	VKWIFSSVVD	LKQTIIPDYR	NMIGQGA 30
human-Ig1	VKWIFSSVVD	LKQTIIPDYR	NMIGQGA 31
mouse-Ig1	VKWIFSSVVE	LKQTLVPEYK	NMIGQAP 32
mouse-Ig2a	VKWIFSSVVE	LKQTIIPDYR	NMIGQGA 33
mouse-mRNA	VKWIFSSVVE	LKQTLVPEYK	NMIGQAP 34
mouse-Ig3	VKWIFSSVVQ	VKQTAIPDYR	NMIGQGA 35
mouse-Ig3/2	VKWIFSSVVQ	VKQTAIPDYR	NMIGQGA 36
rabbit	VKWIFSSVVE	LKHTIAPDYR	NMMGQGA 37
sheep-clone1/11	VKWIFSSV..	38

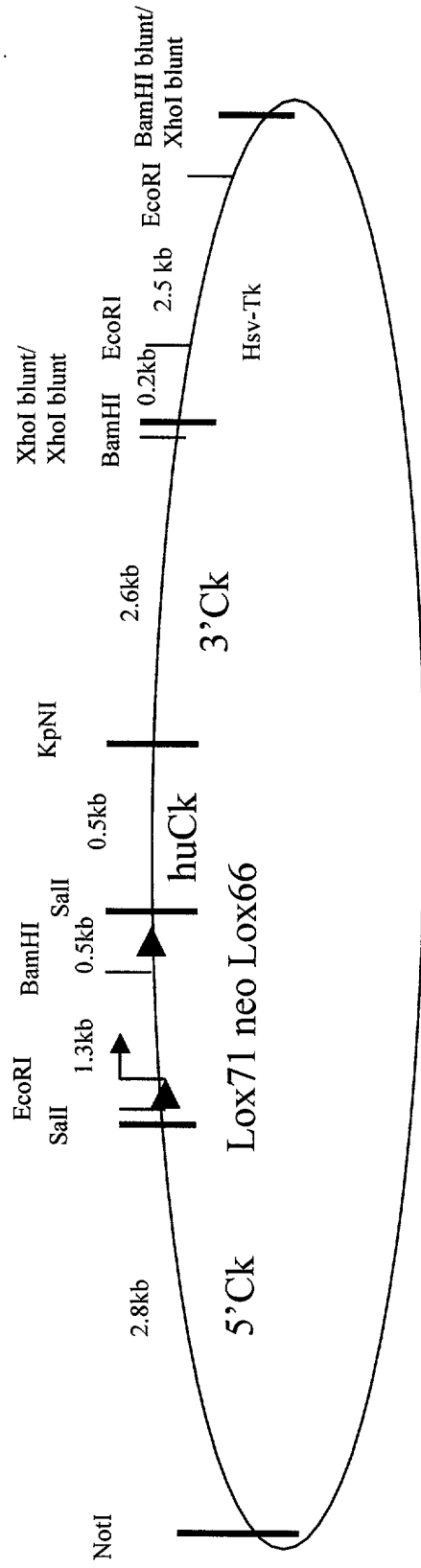


Figure 7a: DNA construct for the replacement of rabbit Cκ with human Cκ. A 0.5 kb fragment containing a DNA sequence encoding human Cκ is flanked by sequences from the rabbit Cκ1 gene. The upstream sequence (5'Cκ) is 2.8 kb, the downstream sequence (3'Cκ) is 2.6 kb. The vector also contains a lox-neo cassette for positive selection and a Hsv-Tk cassette for negative selection.

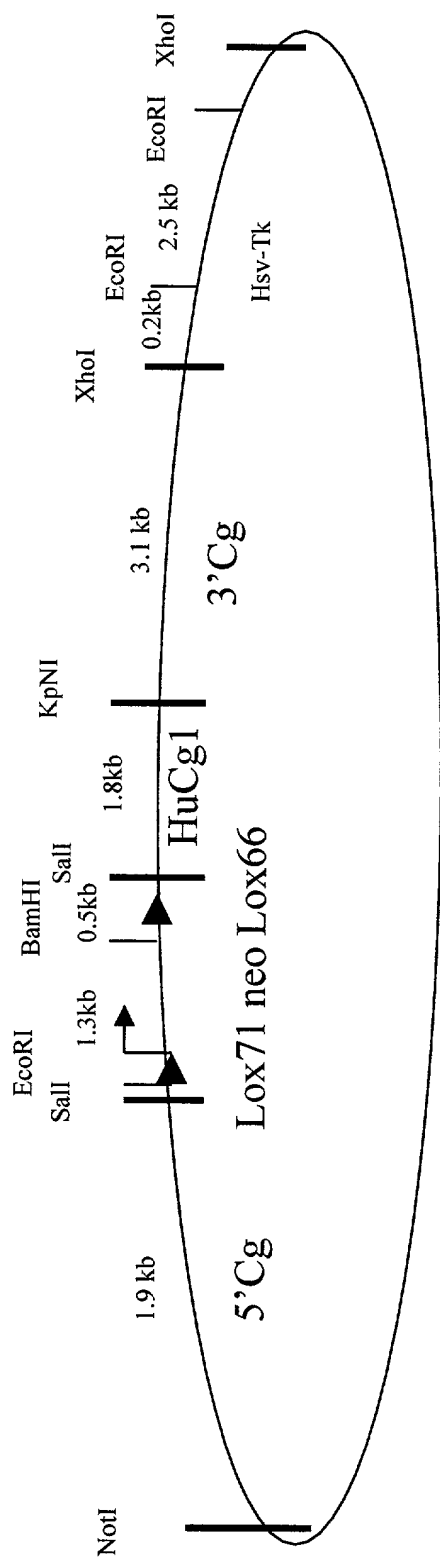


Figure 7b: DNA construct for the replacement of rabbit Cγ with human Cγ1. A 1.8 kb fragment containing a DNA sequence encoding human Cγ1 is flanked by sequences from the rabbit Cγ gene. The upstream sequence (5'Cγ) is 1.9 kb, the downstream sequence (3'Cγ) is 3.1 kb. The vector also contains a lox-neo cassette for positive selection and a Hsv-Tk cassette for negative selection. The figure is not up to scale.

Figure 8. DNA fragment (SEQ ID NO: 51) containing a human immunoglobulin heavy chain C γ 1 gene segment flanked by 50 nucleotides derived from the rabbit heavy chain immunoglobulin gene. Flanking sequences derived from rabbit immunoglobulin DNA sequences are underlined.

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aagggatcac atggcaccac tgacctacct accctgccaa ggtcaggggt cctccaaggc
ctggcaccct cctccaagag cacctctggg ggcacagcgg ccctgggctg cctggtcaag
gactacttcc ccgaaccggg gacggtgtcg tggaactcag gcgccctgac cagcggcgtg
cacaccttcc cggtgtcct acagtcctca ggactctact ccctcagcag cgtggtgacc
gtgccctcca gcagcttggg caccagacc tacatctgca acgtgaatca caagcccagc
aacaccaagg tggacaagaa agttggtgag aggccagcac agggaggag ggtgtctgct
ggaagccagg ctacgcgtc ctgcctggac gcatcccgcc tatgcagccc cagtccaggg
cagcaaggca ggcctcgtct gcctcttcac ccggaggcct ctgcccgccc cactcatgct
cagggagagg gtcttctggc tttttcccca ggctctgggc aggcacaggc taggtgcccc
taaccaggc cctgcacaca aaggggcagg tgctgggctc agacctgcca agagccatat
ccgggaggac cctgcccctg acctaagccc accccaaagg ccaaactctc cactccctca
gctcggacac cttctctcct ccagattcc agtaactccc aatcttctct ctgcagagcc
caaatcttgt gacaaaactc acacatgccc accgtgcca ggtaagccag ccaggcctc
gccctccagc tcaaggcggg acaggtgccc tagagtagcc tgcattccagg gacaggcccc
agccgggtgc tgacacgtcc acctccatct cttctcagc acctgaactc ctggggggag
cgtcagtctt cctcttcccc ccaaaaccca aggacaccct catgatctcc cggacccctg
aggtcacatg cgtggtggtg gacgtgagcc acgaagaccc tgaggtcaag ttcaactggt
acgtggacgg cgtggagggt cataatgcca agacaaagcc gcgggaggag cagtacaaca
gcacgtaccg tgtggtcagc gtctcaccg tcctgcacca ggactggctg aatggcaagg
agtacaagtg caaggtctcc acaaagccc tcccagcccc catcgagaaa accatctcca
aagccaaagg tgggacccgt ggggtgcgag ggccacatgg acagaggccg gctcggccca
ccctctgccc tgagagtgac cgctgtacca acctctgtcc ctacagggca gcccagagaa
ccacagggtg acacctgcc cccatcccgg gatgagctga ccaagaacca ggtcagcctg
acctgcctgg tcaaaggctt ctatcccagc gacatcgccg tggagtggga gagcaatggg
cagccggaga acaactacaa gaccacgcct ccgctgctgg actccgacgg ctcttcttc
ctctacagca agctcaccgt ggacaagagc aggtggcagc aggggaacgt cttctcatgc
tccgtgatgc atgaggctct gcacaaccac tacacgcaga agagcctctc cctgtctccg
ggtaaatgag cgctgtgccg gcgagctgcc cctctccctc cccccacgc cgcagctgt.

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Figure 9. The DNA fragment (SEQ ID NO: 52) containing a VH gene segment with more than 80% sequence identity with rabbit VH elements and encoding a human VH element polypeptide sequence. Flanking sequences derived from rabbit immunoglobulin DNA sequences are underlined.

tgagtgacag tgtcctgacc atgtcgtctg tgtttgcagg tgtccagtgt
gaggtgcagc tgttggagtc cgggggaggt ctctccagc caggggggac cctgagactc
acctgcgcag tctctggatt caccttcagt agctatgcaa tgagctgggt ccgccaggct
ccagggaagg ggctggaatg ggctcgagcc attagtggta gtggtagcac atactacgcg
gacagcgtga aaggccgatt caccatctcc agagacaact ccaagaacac gctgtatctg
caaatgaaca gtctgagagc cgaggacagc gccgcctatt actgtgcgaa agacacagtg
aggggccctc aggctgagcc cagacacaaa cctccctgca

Figure 10. DNA fragment (SEQ ID NO: 53) containing a human immunoglobulin light chain C κ gene segment flanked by 50 nucleotides derived from the rabbit light chain immunoglobulin Kappal gene. Flanking sequences derived from rabbit immunoglobulin DNA sequences are underlined.

ggagatgtcc actggtacct aagcctcgcc atcctgtttg cttctttcct caggaactgt
ggctgcacca tctgtcttca tcttcccgcc atctgatgag cagttgaaat ctggaactgc
ctctgttggt tgctgtctga ataacttcta tcccagagag gccaaagtac agtggaaggt
ggataacgcc ctccaatcgg gtaactccca ggagagtgtc acagagcagg acagcaagga
cagcacctac agcctcagca gcaccctgac gctgagcaaa gcagactacg agaaacacaa
agtctacgcc tgcgaaagta cccatcaggg cctgagctcg cccgtcacaa agagcttcaa
caggggagag tgtagagcg agacgcctgc cagggcaccg ccagcgaccc tgaggcccag
cctcgc.

Figure 11. DNA fragment (SEQ ID NO: 54) containing a V κ gene segment with more than 80% sequence identity with rabbit V κ elements and encoding a human V κ element polypeptide sequence. Flanking sequences derived from rabbit immunoglobulin DNA sequences are underlined.

catgcaggag gcagtaccag gcaggaccca gcatggacat gagggtcctt gctcagctcc
tgggactcct gctgctctgg ctcccaggta aggagggaaa caacaaaaat tttattcagc
cagtgtagcc actaatgcct ggcaacttcag gaaattcttc ttagaacatt actaatcatg
tggatatgtg tttttatgtt cctaatatca gataccagat gttacatcca gatgaccag
totccatcct ctctgtctgc atctgtggga gacagagtca ccatcacttg ccgagccagt
cagggcatta gcaattactt agcctggtat cagcagaaac caggggaaggt tcccaagctc
ctgattttatg ctgcatccac tttgcaatct gggggtcccat cgcggttcag tggcagtgga
tctgggacag atttcaactct taccatcagc agcctgcagc ctgaagatgt tgccacctat
tactgtcaaa agtacaacag tgcccctcca cttttcggcg gagggaccaaa ggtggagatc
aaacgtaagt gcaatttctt aatgttcttc accgtttctg cctgattttgt ttgctttttc
cattttttcgtat..

Figure 13. Modification of the chicken light chain locus using the ET system.

A chicken genomic BAC clone with the full length light chain locus was modified by homologous recombination. In a first step $C\lambda$ was deleted by insertion of a selection cassette which was in a second homologous recombination step exchanged against the human $C\lambda$ gene. The homology stretch was 50bp.

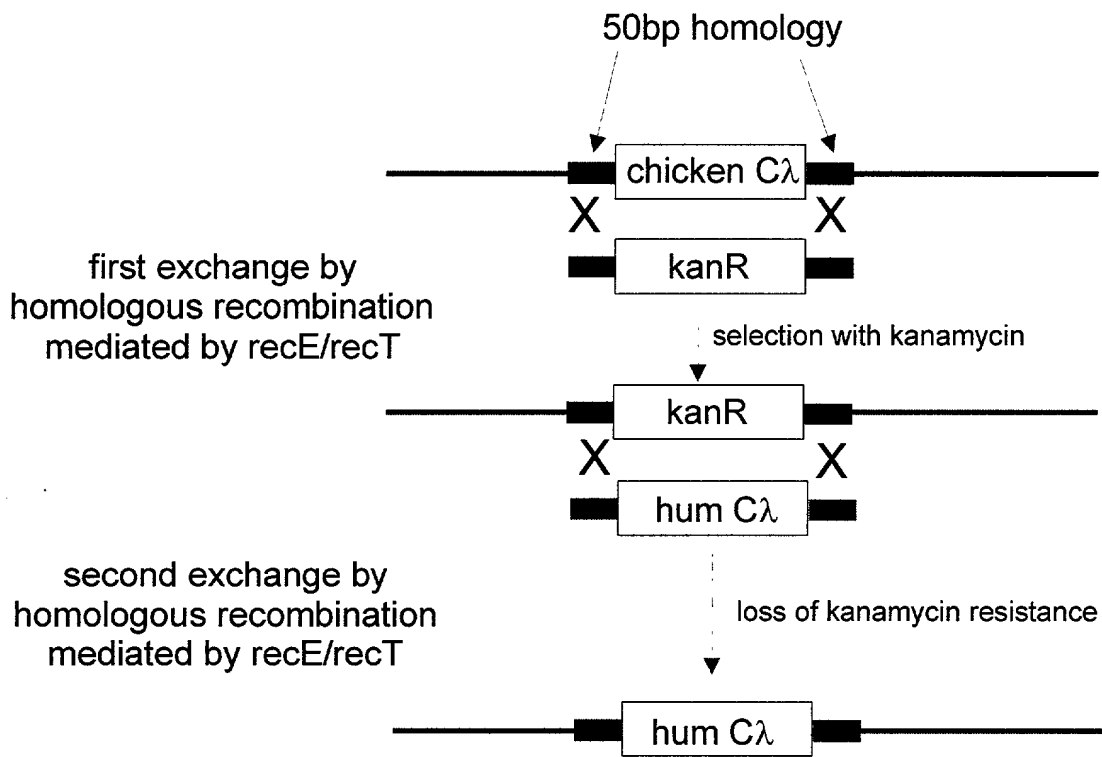


Figure 14. DNA fragment (SEQ ID NO: 58) containing a VJ gene segment with 80% sequence identity with chicken V gene segments and encoding a human VJ immunoglobulin polypeptide. Flanking sequences derived from chicken immunoglobulin DNA sequences are underlined.

.ttgccgttt tctccctct ctctctccc tctccagggt ccctgggtgca gtcagtgtg actcagccgc
cctcgggtgtc agcagccccg ggacaagaag tcaagatctc ctgctccggg tctagtagca acattggcga
taatttcgtc tcttggtacC agcagctgcc tggcactgcc cctaagcttc tgatctatga taacaacAag
agaccctcgg gcatccctga ccgattctcc ggttccaaat ccggcacctc agccacatta ggcactactg
ggctccaaac cggcgacgag gctgactatt actgtgggac ttgggacagc agcctttctg ttggtatgtt
tgggggcggg acacgcgtga ccgtcctagg tgagtcgtgt accctgtctc ggtctttctt ccccat...

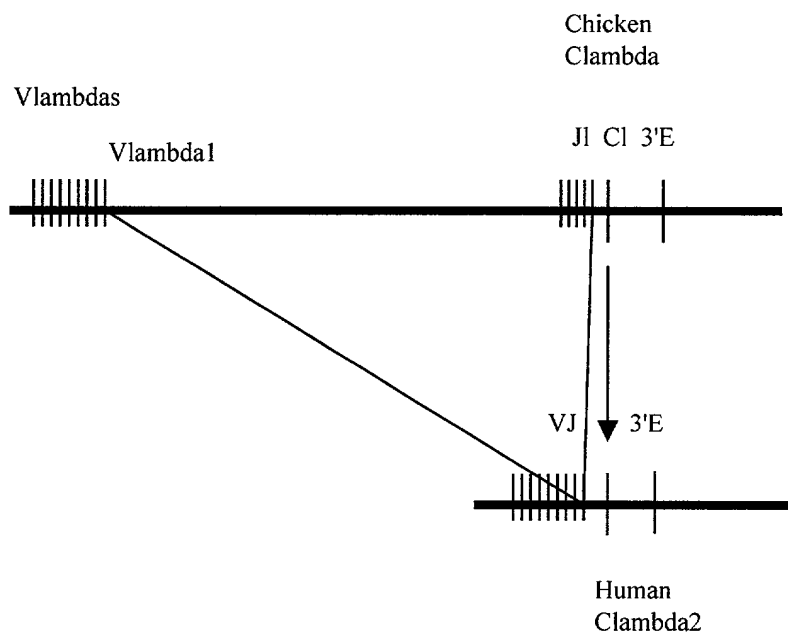


Figure 15. Humanized chicken light chain locus.